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Ames

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[54] MULTI-CHANNEL FIBER OPTIC ROTARY JOINT FOR SINGLE-MODE FIBER

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[52] **U.S. Cl.** **385/26**; 385/25; 385/36

[58] **Field of Search** 385/25, 26, 36

[56] **References Cited**

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[57] **ABSTRACT**

A fiber optic rotary joint device is described which includes a rotor connected to either an input or output fiber optic array and a stator connected to the other of the input or output fiber optic array. A prism is mounted within the rotor for derotating an image of the input array to allow coupling to the output array. A prism rotor and a gear system are provided for rotating the prism at half the speed of the rotor. Optical means are provided for two adjustment tiers (small angular adjustment and fine adjustment) of alignment of the light propagation path for each channel of the array. Mechanical structural features provide maintanance of accurate alignment of optical elements under rotation of the joint. Further mechanical structural features provide resiliency of the gear system to isolate its operation from maintenance of mechanical alignment of optical elements.

13 Claims, 3 Drawing Sheets